The Effects of Teaching Increasing Student Performance

Research paper used to draw insights: Maryam Hemmati Nasab[1*], Norrolah Nejad Sadeghi[1], Manijeh Shehni Yailagh[2], Maryam Khooshe Charkh[1] （ Department of mathematic, Shahid Chamran University, Ahvaz, Iran [2]Department of Educational Psychology, Shahid Chamran University, Ahvaz, Iran ）

Introduction:

The limit concept as the origin of calculus has always been one of the most difficult concepts for students to grasp. The purpose of this study was to investigate the students limit misconception, and study whether there were any differences between two limits teaching methods.

Data:

The subjects consisted of 84 third grades female that were selected by Multi-Stage random sampling method.The population of this study was all of the female junior high school students in Dezful, I ran, in 2012-2013. They were randomly divided into two groups (control and experimental). In the collection of the data, the researchers administered a test with 34 questions on the limit and continuity concepts.

Analysis:

Firstly, the 84 female junior grade students divided to two groups. The first group, namely control group, was taught the limit concept by traditional teaching in 4 weeks (4 hours in a week). At the same time, in another class the second group was taught the limit concept, by regular teaching method. After this process, all students were tested in limit and continuity concepts to measure their misconceptions about these concepts. The students answered to these items; then the data was coded and categorized. Percentage and misconceptions score was calculated for each student.

Table 1. Descriptive statistics of students' misconceptions in both experimental and control groups.

Groups	N	Average	SD	The lowest percentage	The highest percentage
Control group	42	36.17	11.84	18	64
Experimental group	40	15.2	6.17	6	30

As table 1 shows, misconception percent's' average and standard deviation for the control group was found to be, and and for experimental group was found to be and .
The results of multivariate analysis of variance (MANOVA), the average of the seven misconceptions' component scores, student misconceptions in both the control and experimental groups are shown in table 2.

Table 2. Results of multivariate analysis of variance on the average of the seven misconceptions' component scores for students' misconceptions in both the control and experimental groups.

Effect	F	df	df Error	Value	Sig.
Pillai's trace	14.67	7	74	0.581	0.001
Wilk's lambda	14.67	7	74	0.419	0.001
Hotelling's trace	14.67	7	74	1.388	0.001
Roy's largest root	14.67	7	74	1.388	0.001

According to the results of table 2, the difference between the percentage mean among two students' groups with different teaching methods in limit misconception was significant at 0.001 alpha level of significance. This means that at least in one component out of the seven components of misconception, t here is a statistically significant difference between experimental and control groups in the average percentage. Table 3 shows the results of one way on the MANOVA text on the Students' mean percentage in seven components of misconception.

Table 3. Results of One Way on the MANOVA text on the Students' mean percentage in seven components of misconception.

Misconceptions components	SS	df	Mean Square	F	Sig.
Misconceptions type 1	425953	1	425953	12.16	0.002
Misconceptions type 2	20789.50	1	20789.50	43.51	0.001
Misconceptions type 3	21930.38	1	21930.38	36.39	0.001
Misconceptions type 4	8938.57	1	8938.57	41.10	0.001
Misconceptions type 5	22726.52	1	22726.52	38.81	0.002
Misconceptions type 6	4900.74	1	4900.74	9.98	0.001
Misconceptions type 7	5522.88	1	5522.88	12.57	0.001

As can be seen in table 3, the difference between two students groups with different teaching methods in limit misconception percentage mean was significant at 0.05 alpha level of significance in all seven misconceptions' components. The results of multivariate analysis of variance shows that administered teaching method in limit concept is effective than the traditional teaching method in promoting conceptual understanding. In the following part, t he study was administered to determine the consistency between experimental and control groups in their math performance before the intervention. Table 4 shows independent t-tests on students' math performance in two groups, before intervention.

Table 4. Results of independent t-tests on students' math performance in two groups, before intervention.

Groups	N	t	df	Sig.
Control group	42	0.834	80	0.407
Experimental group	40			

As table 4 shows, the difference between two groups was not significant $(t = -0.834)$. This means that the students math performance in the experimental and control groups was not statistically significant. Thus, subjects in two groups before the intervention were almost identical. Also, to examine the hypothesis two independent samples t-tests were used, to analyze the difference between the mean scores in the limits' concepts and continuity between the experimental and control groups after the intervention . The table 5 examine differences in the limits' student performance scores in the experimental and control groups after the intervention.

As table 4 shows, t he difference between two groups was not significant (t= -0.834)

math performance in the experimental and control groups was not statistically significant. Thus, subjects in two groups before the intervention were almost identical. Also, t o examine the hypothesis two independent samples t-tests were used, to analyze the difference between the mean scores in the limits' concepts and continuity between the experimental and control groups after the intervention . The table 5 examine differences in the limits' student performance scores in the experimental and control groups after the intervention.

Table 5. Results of independent t-tests on students' math performance in two groups, after intervention.

Groups	N	t	df	Sig.
Control group	42	-7.770	80	0.001
Experimental group	40			

As table 5 shows, t he difference between two groups was significant at the 0.001 alpha level of significance (
results of table 5 in limit performance between students in the experimental and control groups were significantly different. Thus, t he second hypothesis is confirmed.

Conclusion

The finding of this study suggests tha**t the teaching method used by researchers is effective in improving mathematical performance score and conceptual understanding** of limit and continuity concepts. The **study also indicates that teachers need to reflect more on misconceptions of students and not to ignore them**. Also when presenting the mathematical concepts, the teacher need to pay attention to the learner's skills and knowledge. they **need to help students discover concepts for themselves and avoid transfer them directly to student.**